

AMENDMENT UNDER 37 C.F.R. § 1.111
U. S. Appln. No. 10/699,688
Attorney Docket No. Q78112

REMARKS

Claims 1-20 are all the claims pending in the application. By this Amendment, Applicant editorially amends claims 1-10. The amendments to claims 1-10 were made for reasons of precision of language and consistency, and do not narrow the literal scope of the claims and thus do not implicate an estoppel in the application of the doctrine of equivalents.

In addition, Applicant amends claims 1, 6, and 10 to further clarify the invention. By this Amendment, Applicant also adds claims 11-20, which are clearly supported throughout the specification *e.g.*, Figs. 1 and 2 and pages 8 and 9 of the specification.

I. Preliminary Matters

As preliminary matters, the Examiner has acknowledged Applicant's claim to foreign priority and has indicated receipt of the certified copy of the priority document. The Examiner has returned form PTO/SB/08 submitted with the Information Disclosure Statements filed on November 4, 2003. The Examiner has indicated acceptance of the drawing figures filed on November 4, 2003.

II. Summary of the Office Action

Claim 10 is rejected under 35 U.S.C. 101 and claims 1-10 are rejected under 35 U.S.C. § 103(a).

III. Claim Rejections under 35 U.S.C. § 101

The Examiner rejected claim 10 under 35 U.S.C. § 101. Applicant respectfully requests the Examiner to withdraw this rejection in view of the self-explanatory claim amendments being made herein.

AMENDMENT UNDER 37 C.F.R. § 1.111
U. S. Appln. No. 10/699,688
Attorney Docket No. Q78112

IV. Prior Art Rejections

Claims 1, 2, 5, 6, 7, and 10 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,265,999 to Prucnal (hereinafter “Prucnal”) in view of U.S. Patent No. 6,404,535 to Leight (hereinafter “Leight”). Applicant respectfully traverses these grounds of rejection in view of the following comments.

In an exemplary, non-limiting embodiment of the present invention, an improved DSP receiver is disclosed. In this exemplary receiver, a received optical signal is split into parts, where each part is provided to a different waveguide branch for different types of processing. For example, one split part is used to obtain overall intensity information and thus, no optical filter elements will be provided in this branch and another split part may be used to obtain phase position and as such optical filtering elements will be provided. Furthermore, each waveguide branch may include a different optical filtering element for a different type of filtering *i.e.*, to obtain a different piece of information about the signal. Accordingly, separate waveguide branches and optical filtering elements recover part of the information that would be lost otherwise (Fig. 2; page 2, line 25 to page 4, line 14 of the specification and page 8, line 24 to page 9, line 10 of the specification). It will be appreciated that the foregoing remarks relate to the invention in a general sense, the remarks are not necessarily limitative of any claims and are intended only to help the Examiner better understand the distinguishing aspects of the claims mentioned further below.

Of these rejected claims, only claims 1, 6, and 10 are independent. These independent claims in some variation *inter alia* recite: wherein different types of filtering process are executed in each waveguide branch or one waveguide branch does not have the optical filter element and the other one of the at least two waveguide branches comprises the optical filter

AMENDMENT UNDER 37 C.F.R. § 1.111
U. S. Appln. No. 10/699,688
Attorney Docket No. Q78112

element. The Examiner contends that these unique features of the independent claims are rendered obvious by Prucnal in view of Leight. In particular, the Examiner acknowledges that Prucnal does not disclose or suggest a branch having a filtering element but alleges that Leight cures the deficient disclosure of Prucnal (*see* page 3 of the Office Action). Applicant respectfully disagrees.

Prucnal relates to improving the speed of the electrical A/D converter. In particular, Prucnal discloses synchronously distributing a high-speed serial data stream into a large number of low-speed parallel data streams. The slower data streams being photoconverted, then sampled by all-electrical A/D converters, and then latched into a memory unit. In Prucnal, an optical waveform is distributed N-ways by an optical splitter and each provided with an equal length delay line (203) followed by a Terahertz Optical Asymmetrical Demultiplexer (TOAD 204). Each of the TOADs then feeds a dedicated photoconverter (215). The output is subsequently electrical, and is digitized by each A/D converter (216). The cycle time is sufficiently slow that the photodetector and the A/D converter electronics can respond and recover completely and be ready for the next sample (Fig. 20, col. 11, line 56 to col. 13, line 10).

Prucnal, however simply discloses a number of identical lines *i.e.*, in each line, the signal goes through TOAD, a delay, etc. That is, Prucnal only discloses a number of identical lines. In other words, Prucnal does not disclose or even remotely suggests variations in the lines. In short, Prucnal does not disclose or suggest having branches with different types of filtering processes or having one line without any filter processing when other lines are provided with different filter processing.

AMENDMENT UNDER 37 C.F.R. § 1.111
U. S. Appln. No. 10/699,688
Attorney Docket No. Q78112

Leight does not cure the above-identified deficiencies of Prucnal. Leight discloses a splitter splitting an optical signal into various optical paths and filtering the signals via filters 30 and 32 after the signals are modulated by the modulators 22 and 24. Furthermore, one of the optical paths is provided with a path length stretcher 36 to provide a phase control calibration (Fig. 1; col. 3, line 25 to col. 4, line 51). In Leight, however, both filters 30 and 32 are sideband filter to provide the zero-bias stabilization and the optical carrier suppression (col. 4, lines 16 to 19). In other words, Leight does not disclose or suggest applying different types of filtering on various optical paths. Furthermore, Leight does not disclose or suggest providing the filtering on only one of the two optical paths.

If one of ordinary skill in the art would have somehow combined Prucnal with Leight, then sideband filters 30 and 32 would have been added to each line. In short, the combined disclosure of Prucnal and Leight do not disclose or suggest providing different optical path as set forth in some variation in these independent claims. For at least these exemplary reasons, claims 1, 6, and 10 are patentable over Prucnal in view of Leight. Claims 2, 5, and 7 are patentable at least by virtue of their dependency on independent claim 1 or 6.

In addition, dependent claim 5 recites: “wherein an additional optical filtering element is arranged between the receiver input and the splitting unit.” That is, in an exemplary, non-limiting embodiment of the present invention, it is disclosed that if filtering are identical, it may be beneficial to perform this type of filtering prior to splitting the signal. Accordingly, in the exemplary embodiment, an additional optical filtering element is provided that filters the entire signal (Fig. 3, page 9, lines 7 to 26 of the specification). The Examiner’s rejection of claim 5 amounts to a mere speculation and is not substantiated by the evidence of record (see page 4 of

AMENDMENT UNDER 37 C.F.R. § 1.111
U. S. Appln. No. 10/699,688
Attorney Docket No. Q78112

the Office Action). It is Applicant's position that the prior art of record does not disclose or suggest the additional filtering element, as set forth in claim 5. In fact, there is no prior art of record that would even remotely suggest placing a filter between the receiver input and the splitting end. In fact, Leight places two identical filters 30 and 32 onto the different optical paths. In short, the prior art of record does not disclose or suggest the unique features of claim 5. For at least these additional exemplary reasons, claim 5 is patentable over Prucnal in view of Leight.

Claims 3 and 4 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Prucnal and Leight in view of in view of U.S. Patent No. 6,259,482 to Easley et al. (hereinafter “Easley”). Applicant respectfully traverses these grounds of rejection in view of the following comments.

Claims 3 and 4 depend on claim 1. Applicant has already demonstrated that the combined teachings of Prucnal and Leight do not meet all the requirements of independent claim 1. Easley is relied upon only for its alleged disclosure of various filers (*see* page 5 of the Office Action) and as such fails to cure the deficient teachings of Prucnal and Leight. Together, the combined teachings of these references would not have (and could not have) led the artisan of ordinary skill to have achieved the subject matter of claim 1. Since claims 3 and 4 depend on claim 1, they are patentable at least by virtue of their dependency.

Claims 8 and 9 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Prucnal and Leight in view of in view of U.S. Patent Publication No. 2002-0184596 to Dinc et al. (hereinafter “Dinc”). Applicant respectfully traverses these grounds of rejection in view of the following comments.

AMENDMENT UNDER 37 C.F.R. § 1.111
U. S. Appln. No. 10/699,688
Attorney Docket No. Q78112

Claims 8 and 9 depend on claim 6. Applicant has already demonstrated that the combined teachings of Prucnal and Leight do not meet all the requirements of independent claim 1. Dinc is relied upon only for its alleged disclosure of MAP algorithms (*see page 5 of the Office Action*) and as such fails to cure the deficient teachings of Prucnal and Leight. Together, the combined teachings of these references would not have (and could not have) led the artisan of ordinary skill to have achieved the subject matter of claim 6. Since claims 8 and 9 depend on claim 6, they are patentable at least by virtue of their dependency.

V. New Claims

In order to provide more varied protection, Applicant adds claims 11-20. Claims 11-14 are patentable at least by virtue of their dependency on claim 1.

New independent claim 15 is patentable at least by virtue of its recitation of: “the DSP processing unit is configured to correlate information of all waveguide branches to determine one of most likely transmitted bit pattern of the optical signal and numbers for the probability of 0 and 1 in the transmitted bit pattern of the optical signal.” The prior art of record fails to disclose or suggest at least these unique features of claim 15. Dinc discloses MAP algorithms (¶ 16) but fails to disclose or suggest correlating information of all waveguide branches to make this determination. For at least these exemplary reasons, claim 15 is patentable over the prior art of record. Claims 16-19 are patentable by virtue of their dependency on claim 15.

Independent claim 20 recites features similar to, although not necessarily coextensive with, the features argued above with respect to claim 15. For at least substantially analogous exemplary reasons, claim 20 is patentable over the prior art of record.

AMENDMENT UNDER 37 C.F.R. § 1.111
U. S. Appln. No. 10/699,688
Attorney Docket No. Q78112

VI. Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly invited to contact the undersigned attorney at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

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